User Guides

IDC DOCUMENTATION

Database Schema

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Revision 3

Notice

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Ordering Information

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Change Page

This document is Revision 3 of the Database Schema. The following changes have been made for this publication:

Page	Change
All	The revision number of the document was changed to 3.
ii	Descriptions of the changes included in this version of the document were updated.
iv	New references were added to the Related Information section.
8	The Fundamental S/H/I table relationships figure was changed. The relationship between **stamag** and **netmag** was changed from many-to-one to many-to-zero or many-to-one. The relationship between **wftag** and **wfdisc** was changed; the "zero" on the **wfdisc** side of the relationship was removed.
14	The Waveform table relationships figure was changed. All relationships between **wftag** and another table were changed to many-to-one or zero-to-one.
16	The Network table relationships figure was changed. The relationship between **site** and **site_address** was changed from one-to-one to many-to-one.
19	The Event Screening table relationships figure was changed to reflect new table contents. The figure was also moved from the Fundamental category to the Automatic Processing category.
20	The Analyst Review table relationships figure was changed to include the **revaudit** table.
22	The Timeseries Spectrums table relationships figure was changed. The relationship between **wftag** and **wfdisc** was changed from many-to-one to many-to-one or zero-to-one.
26	The Subscription Subsystem table relationships figure was changed to reflect new table contents.
27	The **std_chanmap** and **exception_chanmap** tables were added to the Message and Subscription Subsystems Support Tables figure.
27, 60, 322	The *msgtype* attribute was added to the **datauser** table.
73	The *cp8*, *snr7*, and *noi7* attribute definitions in the **evsc_hydro** table were replaced by *cp_broad_band*, *snr_high_band*, and *noise_high_band*.
73, 195	The *arid* attribute was removed from the **evsc_hydro** table.
73, 353	The *prodid* attribute was removed from the **evsc_hydro** table.

Page	Change
73, 384	The *sta_clear_path* attribute was removed from the **evsc_hydro** table.
73, 384	The *sta_score* attribute was removed from the **evsc_hydro** table.
74	The *moveout*, *ndp_snr*, *magtype_mb*, *magtype_ms*, *tect_num*, *net_pnsmax5*, and *net_pnsmax7* attributes were removed from the **evsc_prod** table and the *moveout_pp*, *moveout_sp*, *min_dt_pp*, *min_dt_sp*, *ndp_snr_pp*, *ndp_snr_sp* attributes were added to the **evsc_prod** table. Several of the definitions were also updated.
76	The description for the **evsc_regional** table was updated. The *chan*, *pnsmax*, *pnsmax_corr*, *pnsmax_err*, *pnsn*, *pnlg*, *pn_snr*, *sn_snr*, *lg_snr*, *pnsn_qual*, and *pnlg_qual* attributes were added to the table, and the *prodid*, *pnsmax5*, *pnsmax7*, *pnsn5*, *pnsn7*, *pnlg5*, *pnlg7*, *pn5_sn*, *pn7_sn*, *sn5_sn*, *sn7_sn*, *lg5_sn*, *lg7_sn*, *pnsn5_qual*, *pnsn7_qual*, *pnlg5_qual*, and *pnlg7_qual* were dropped from the table
80	The **exception_chanmap** table was added to the S/H/I Table Descriptions chapter.
83	The **fs_stageproduct** table was added to the schema. It is the same as the **fileproduct** table.
83, 240	The format of the *dsize* attribute in the **fileproduct** table was changed from number(8) to number(10).
83, 255	The format of the *foff* attribute in the **fileproduct** table was changed from number(8) to number(10).
87	The format of the *msgdformat* attribute in the **fpdescription** table was changed from varchar2(8) to varchar2(16).
121, 323	The format of the *msize* attribute in the **msgdisc** table was changed from number(8) to number (10).
122, 253	The format of the *filesize* attribute in the **msgdisc** table was changed from number(8) to number (10).
122, 307	The format of the *mfoff* attribute in the **msgdisc** table was changed from number(8) to number (10).
122, 252	The format of the *fileoff* attribute in the **msgdisc** table was changed from number(8) to number (10).
122, 255	The format of the *foff* attribute in the **msgdisc** table was changed from number(8) to number (10).

Page	Change
140	The description for the **producttypeevsc** table was updated. The *min_ndp_pp*, *min_ndp_sp*, *min_moveout_pp*, *min_moveout_sp*, *min_dp_snr_pp*, *min_dp_snr_sp*, *magpref_mb*, and *magpref_ms* attributes were added to the table. The *min_ndp*, *min_moveout*, *min_dp_snr*, *reg_min_psnr*, and *reg_min_ssnr* were dropped from the table.
153	The **revaudit** table was added to the schema.
170	The **std_chanmap** table was added to the S/H/I database tables chapter.
197	The **revaudit** table was added to the *auth* attribute description.
208	The **evsc_regional** table was added to the *chan* attribute description.
220	The *cp8* attribute description was replaced by *cp_broad_band*.
251	The *ext_chan* attribute was added to the S/H/I attributes.
268	The *hydro_grp_phase* attribute name was corrected to *hyd_grp_phase*.
275	The *int_chan* attribute was added to the S/H/I attributes.
283	The **exception_chanmap**, **revaudit**, and **std_chanmap** tables were added to the *lddate* attribute description.
284	The *lg_snr* attribute replaced the *lg5_sn* and *lg7_sn* attributes.
295	The *magpref_mb* and *magpref_ms* attributes were added to the S/H/I Column Descriptions chapter.
296	The *magtype_mb* and *magtype_ms* attributes were removed from the S/H/I Column Descriptions chapter.
308	The *min_dp_snr_pp* and *min_dp_snr_sp* attributes replaced the *min_dp_snr* attribute.
308	The *min_dt_pp* and *min_dt_sp* attributes were included in the S/H/I Column Descriptions chapter.
309	The *min_moveout_pp* and *min_moveout_sp* attributes replaced the *min_moveout* attribute.
310	The *min_ndp_pp* and *min_ndp_sp* attributes replaced the *min_ndp* attribute.
318	The *moveout_pp* and *moveout_sp* attributes replaced the *moveout* attribute.
329	The *ndp_snr_pp* and *ndp_snr_sp* attributes replaced the *ndp_snr* attribute.
330	The *net_pnsmax5* and *net_pnsmax7* attributes were removed from the S/H/I Column Descriptions chapter.

Page	Change
333	The *noi7* attribute description was replaced by *noise_high_band*.
337	The **exception_chanmap** and **std_chanmap** tables were added to the *offdate* attribute description.
338	The **exception_chanmap** and **std_chanmap** tables were added to the *ondate* attribute description.
346	The *pn_snr* attribute replaced the *pn5_sn* and *pn7_sn* attributes.
347	The *pnlg* attribute replaced the *pnlg5* and *pnlg7* attributes.
347	The *pnlg_qual* attribute replaced the *pnlg5_qual* and *pnlg7_qual* attributes.
347	The *pnsmax* attribute replaced the *pnsmax5* and *pnsmax7* attributes.
347	The *pnsmax_corr* and *pnsmax_err* attributes were added to the S/H/I Column Descriptions chapter.
348	The *pnsn* attribute replaced the *pnsn5* and *pnsn7* attributes.
348	The *pnsn_qual* attribute replaced the *pnsn5_qual* and *pnsn7_qual* attributes.
353	The **evsc_regional** table was dropped from the *prodid* attribute description.
363	The *reg_min_psnr* and *reg_min_ssnr* attributes were dropped from the S/H/I Column Descriptions chapter.
365	The *revfunction*, *revid*, *revtagid1*, *revtagname1*, *revtagid2*, *revtagname2*, and *revstate* attributes were added to the S/H/I Column Descriptions chapter.
380	The *sn_snr* attribute replaced the *sn5_sn* and *sn7_sn* attributes.
380	The *snr7* attribute description was replaced by *snr_high_band*.
384	The **exception_chanmap** table was added to the *sta* attribute description.
396	The *tectnum* attribute was removed from the S/H/I Column Descriptions chapter.
416	The Database Table Groups table was altered to reflect the changes to the radionuclide schema since the last release of the document.
422	The **gards_flags** table was added to Table 126.
422	The **gards_bg_energy_cal** table was added to Table 127.
426	Several new synonyms were added to the RMSAUTO account (Table 129).
429	Triggers for the RMSAUTO account were consolidated and updated (Table 130).

Page	Change
435	The **gards_dbrole_owner** table was added to the RMSMAN unique data constraints (Table 132).
435	The **gards_flags** table was added to the RMSMAN primary key constraints (Table 133).
436	The **gards_bg_energy_cal** table was added to the RMSMAN foreign key constraints (Table 134).
438	Several sequences were added to the RMSMAN account (Table 136).
439	Several synonyms were added to the RMSMAN account (Table 137).
444	The **gards_soh_char_data**, **gards_soh_num_data**, and **gards_soh_sensor_data** tables replaced the **gards_soh_data** table in Figure 27.
449	The **gards_sample_cat** table replaced the **gards_nic** table in Figure 32.
452	The **gards_sample_xe_procs_params** table was updated in Figure 35.
453	The **gards_comments_defs** table was added to Figure 36 and new attributes were added.
457	The **gards_auto_sample_cat** table was added to the radionuclide schema.
465	The **gards_bg_energy_cal** table was added to the radionuclide schema.
466	The **gards_cat_template** table was added to the radionuclide schema.
469	The **gards_comments** table was altered; the *type* attribute was changed to *comment_type*.
471, 598	The *dlid* attribute was added to the **gards_data_log** table.
472	The **gards_dbrole_owner** table was added to the radionuclide schema.
490	The **gards_nic** and **gards_nic_init** tables were removed from the radionuclide schema.
508, 595	The *db_name* attribute was added to the **gards_permissions** table.
530, 595	The *db_name* attribute was added to the **gards_roles** table.
533	The **gards_sample_cat** table was added to the radionuclide schema.
546	Several attributes were added to the **gards_sample_xe_procs_params** table.
547	The **gards_soh_char_data** table was added to the radionuclide schema.
548	Several attributes were added to the **gards_soh_code** table.
548	The **gards_soh_data** table was removed from the radionuclide schema.

Page	Change
550	The **gards_soh_num_data** table was added to the radionuclide schema.
551	The **gards_soh_sensor_data** table was added to the radionuclide schema.
561, 639	The *sample_id* attribute was added to the **gards_user_comments** table.
563, 595	The *default_role* attribute was moved from the **gards_users** table to the **gards_users_roles** table.
567	Several attributes were added to the **gards_xe_proc_params_template** table.
570	The *abscissa* attribute was added to the radionuclide schema.
573	The **gards_auto_sample_cat** and **gards_sample_cat** tables were added to the *activity* attribute.
574	The **gards_cat_template** table was added to the *alpha* attribute.
582	The **gards_cat_template** table was added to the *begin_date* attribute.
583	The *beta_coeff1*, *beta_coeff2*, and *beta_coeff3* attributes were added to the radionuclide schema.
583	The *beta_ecr_order* attribute was added to the radionuclide schema.
586	The **gards_auto_sample_cat** and **gards_sample_cat** tables were added to the *category* attribute.
586	The **gards_cat_template**, **gards_sample_cat**, and **gards_auto_sample_cat** tables were added to the *central_value* attribute.
591	The **gards_cat_template** table was added to the *comment_text* attribute.
591	The **gards_comments** table was added to the *comment_type* attribute and the format was changed to number.
592	The **gards_sample_xe_proc_params** and **gards_xe_proc_params_template** tables were added to the *compton* attribute.
592	The *constant* attribute was removed from the radionuclide schema.
596	The *delta* attribute was added to the radionuclide schema.
597	The *det_back_used* attribute was added to the radionuclide schema.
598	The **gards_cat_template**, **gards_soh_char_data**, **gards_soh_num_data**, and **gards_soh_sensor_data** tables were added to the *detector_id* attribute.
598	The *display_detector* and *display_station* attributes were added to the radionuclide schema.

Page	Change
600	The **gards_soh_char_data**, **gards_soh_num_data**, and **gards_soh_sensor_data** tables replaced the **gards_soh_data** table in the *dtg_begin* attribute.
600	The **gards_soh_char_data**, **gards_soh_num_data**, and **gards_soh_sensor_data** tables replaced the **gards_soh_data** table in the *dtg_end* attribute.
603	The **gards_cat_template** table was added to the *end_date* attribute.
611	The **gards_cat_template** table was added to the *gamma* attribute.
611, 612	The *gamma_coeff1*, *gamma_coeff2*, and *gamma_coeff3* attributes were added to the radionuclide schema.
612	The *gamma_ecr_order* and *gas_back_used* attributes were added to the radionuclide schema.
614	The **gards_auto_sample_cat** and **gards_sample_cat** tables were added to the *hold* attribute.
615	The *init_begin_date* and *init_end_date* attributes were added to the radionuclide schema.
617	The **gards_sample_xe_proc_params** and **gards_xe_proc_params_template** tables were added to the *lc_abscissa* attribute.
618	The *lower_bound* attribute was added to the radionuclide schema.
621	The *method_id* and *method_type* attributes were added to the radionuclide schema.
624	The **gards_cat_template**, **gards_sample_cat**, and **gards_auto_sample_cat** tables were added to the *name* attribute.
627	The *num_samples* attribute was added to the radionuclide schema.
628	The *owner* attribute was added to the radionuclide schema.
628	The **gards_soh_char_data** and **gards_soh_num_data** tables replaced the **gards_soh_data** table in the *param_code* attribute.
629	The *param_display* and *param_display_flag* attributes were added to the radionuclide schema.
639	The **gards_auto_sample_cat**, **gards_sample_cat**, and **gards_bg_energy_cal** tables were added to the *sample_id* attribute.
640	The *sensor_name* and *sensor_type* attributes were added to the radionuclide schema.
643	The **gards_cat_template**, **gards_soh_char_data**, **gards_soh_num_data**, and **gards_soh_sensor_data** tables were added to the *station_id* attribute.

Page	Change
646	The **gards_cat_template** table was added to the *tstat* attribute.
646	The *type* attribute for **gards_comments** was deleted from the radionuclide schema.
647	The *unit* attribute was added to the radionuclide schema.
647	The *upper_bound* attribute was added to the radionuclide schema.
649	The **gards_soh_char_data**, **gards_soh_num_data**, and **gards_soh_sensor_data** tables replaced the **gards_soh_data** table in the *value* attribute.
651	The **gards_cat_template** table was added to the *xform* attribute.
R1	Several new references were added to the document.

Database Schema

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Database Schema

FIGURES

Database Schema

TABLES

About this Document

This chapter describes the organization and content of the document and includes the following topics:

About this Document

PURPOSE

This document describes the Prototype International Data Centre (PIDC) database schema. It is Revision 3 of *Database Schema*.

Since the Revision 2 publication, four new tables have been added and seven tables have been modified in the seismic, hydroacoustic, infrasonic (S/H/I) schema. Descriptions of all tables, columns, and entity relationships have been added, changed, or deleted to reflect the following changes:

- The *msgtype* attribute was added to the **datauser** table.
- Tables used by the Event Screening Subsystem (**evsc_hydro**, **evsc_prod**, **evsc_regional**, and **producttypeevsc**) were altered to meet the needs of software updates.
- The **fs_stageproduct** table was added to the schema to retain the results of running the *FSstage* process between runs. This table has the same structure as the **fileproduct** table.
- Storage formats for several of the **fileproduct** and **msgdisc** table attributes were changed.
- The **revaudit** table was added to the schema to keep a history of the revisions made to an event.
- The **std_chanmap** and **exception_chanmap** tables were added to the schema to map external channel names to channel names used within the PIDC.

Since the Revision 2 publication, eight new tables have been added, nine tables have been modified, and three tables have been deleted from the radionuclide schema. Descriptions of all tables, columns, and entity relationships have been added, changed, or deleted to reflect the following changes:

- Three new tables were added to the schema to support categorization: **gards_auto_sample_cat**, **gards_cat_template**, and **gards_sample_cat**.
- Three new tables (**gards_soh_char_data**, **gards_soh_num_data**, and **gards_soh_sensor_data**) replaced the **gards_soh_data** table and the **gards_soh_code** table was altered to support the processing of State of Health (SOH) data.
- The **gards_db_role_owner** table was added and the **gards_permissions**, **gards_roles**, **gards_users**, and **gards_users_roles** tables were altered. These tables manage roles and permissions.
- The **gards_comments**, **gards_data_log**, **gards_sample_xe_proc_params**, and **gards_user_comments** tables were altered.
- The **gards_bg_energy_cal** table was added to the schema.
- The **gards_nic** and **gards_nic_init** tables were removed from the schema.

SCOPE

This document describes the schema used in the PIDC databases. The schema includes relationships between tables, table descriptions, and definitions of the table columns.

This document does not describe the specific location and general use of these tables at the PIDC or how to manipulate them to obtain information. Nor does it provide the formats for external file representations of the tables. These topics are described in sources cited in Related Information.

AUDIENCE

This document is intended for software developers, engineers, scientists, processing operators, and anyone who needs to interact with the databases at the PIDC.

RELATED INFORMATION

This document supersedes [And90a], [Swa91], [Swa93], [Car97], [IDC5.1.1], [IDC5.1.1Rev1], and [IDC5.1.1Rev2].

External formats of all columns used with S/H/I data are described in "S/H/I Column Descriptions" on page 185, and most can also be found in [Car97].

Tables used with specific application software are described in the software design documents (for example, [IDC7.1.1], [IDC7.1.3], [IDC7.1.4], [IDC7.1.5], [IDC7.1.6], [IDC7.1.10Rev1], [IDC7.1.11], [IDC7.1.12], [IDC7.3.1], [IDC7.4.1], [IDC7.4.2], [IDC7.4.3], [IDC7.4.4], and [IDC7.5.1]).

The following documents provide information and instructions for retrieving data from the PIDC databases:

- *Database Tutorial* [IDC5.1.2]
- *Configuration of PIDC Databases* [IDC5.1.3Rev0.1]

See "References" on page R1 for a listing of all the sources of information consulted in preparing this document.

USING THIS DOCUMENT

This document is part of the overall documentation architecture for the International Data Centre (IDC). It is part of the User Guides document category, which provides information relevant to understanding IDC processing.

This document is organized as follows:

- Chapter 1: S/H/I Entity Relationships

  This chapter describes the relationships between the S/H/I database tables.

- Chapter 2: S/H/I Table Descriptions

  This chapter describes each table in the S/H/I database schema (in alphabetical order). It includes information about the category to which the table belongs, the columns included in the table, ORACLE storage types for each column, keys (primary, alternate, and foreign), and column categories (descriptive, measurement, or administrative).

- Chapter 3: S/H/I Column Descriptions

  This chapter provides detailed descriptions of the columns of the S/H/I database schema including the tables in which the columns may be found, a full description of the column, storage and external formats, NA values, units, and ranges.

- Chapter 4: Radionuclide Database Overview

  This chapter provides an overview of the radionuclide database tables through an organizational description of the tables.

- Chapter 5: Radionuclide Entity Relationships

  This chapter describes the relationships between the radionuclide database tables.

- Chapter 6: Radionuclide Table Descriptions

  This chapter describes each table in the radionuclide database schema (in alphabetical order). It includes information about the columns included in the table, ORACLE storage types for each column, and keys (primary, alternate, and foreign).

- Chapter 7: Radionuclide Column Descriptions

  This chapter provides detailed descriptions of the columns of the radionuclide database schema including the tables in which the columns may be found, a full description of the column, storage and external formats, NA values, units, and ranges.

- References

  This section lists the sources cited in this document.

- Glossary

  This section defines the terms, abbreviations, and acronyms used in this document.

- Index

  This section lists topics and features provided in this document along with page numbers for reference.

The print version of this document is separated into three parts for ease of printing. Each part contains one or more chapters of the document. Part 1 includes Chapters 1 and 2; Part 2 includes Chapter 3; and Part 3 includes Chapters 4 through 7. Each part has a complete Table of Contents, an "About this Document" section, a Reference, a Glossary, and an Index. Parts 1 and 3 also have a List of Figures and a List of Tables.

Conventions

This document uses a variety of conventions, which are described in the following tables. Table I shows the conventions for entity-relationship diagrams. Table II lists typographical conventions. Table III explains certain technical terms that are not part of the standard Glossary, which is located at the end of this document.

TABLE I: ENTITY-RELATIONSHIP SYMBOLS

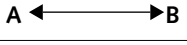
Description	Symbol
One **A** maps to one **B**.	
One **A** maps to zero or one **B**.	

TABLE I: ENTITY-RELATIONSHIP SYMBOLS (CONTINUED)

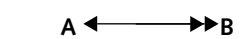
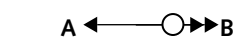
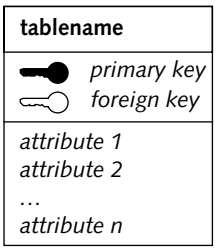
Description	Symbol
One **A** maps to many **B**s.	
One **A** maps to zero or many **B**s.	
database table	

TABLE II: TYPOGRAPHICAL CONVENTIONS

Element	Font	Example
database table	**bold**	**dataready**
database table and column, when written in the dot notation		**prodtrack.***status*
database columns	*italics*	*status*
processes, software units, and libraries		*ParseSubs*
user-defined arguments and variables used in parameter (par) files or program command lines		`delete-remarks` *object*
titles of documents		*Continuous Data Subsystem*
BEA supplied server software (all CAPS)		*BRIDGE*
computer code and output	`courier`	`>(list 'a 'b 'c)`
filenames, directories, and web sites		`ars.scm`
text that should be typed in exactly as shown		`edit-filter-dialog`

TABLE III: TECHNICAL TERMS

Term	Description
Data: Administrative	database columns used for administrative purposes
Data: Descriptive	database columns that are qualitative
Data: Measurement	database columns that are quantitative
field	database column
Keys: Alternate	set of alternate database columns that uniquely define a row in a database table (unique key)
Keys: Foreign	primary key in a different table
Keys: Primary	set of database columns that uniquely define a row in a database table (unique key)

Dates and Times

The *time* column used throughout the S/H/I schema is stored as epochal time, the number of seconds since January 1, 1970. Epochal time has a precision of one millisecond. Often *time* is matched by the more readable field, *jdate*. This "Julian date" represents a day in the form *yyyyddd*; for example, 1981231 where 1981 is the year (*yyyy*) and 231 is the day of year (*ddd*).

Oracle Data Types

The PIDC database uses four of the available ORACLE data types:

- varchar2(*n*)

  All character data in the database are defined to be varchar2(*n*) where *n* is the maximum number of characters in the string. varchar2 does not store trailing blanks.

- number(*n*)

  All integer fields in the database are defined to be number(*n*) where *n* is the maximum number of digits allowed in the field. Number may also be used without specifying the maximum number of digits.

- float(*n*)

  ORACLE supports the float(*n*) data type where *n* is the maximum number of binary digits. Float allows the approximation of single and double precision floats commonly used in scientific programming. The decimal point may be specified anywhere from the first to the last digit (or not at all). All real numbers in the database are single precision float(24), except for epoch time fields such as *time*, *endtime*, and other time fields that are double precision float(53).

- date

  The only columns in the database that are declared to be the ORACLE date data type are the *lddate*, *moddate*, *last_mig_date*, *offdate*, *ondate*, and *initialdate* columns, which store the day and time a record was inserted into the database or last modified.